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PROTOCOL OF DIGNIFIED MANAGEMENT OF COVID-19
DEAD BODIES

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Corona viruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans.

Corona viruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known corona viruses are circulating in animals that have not yet infected humans. Most often, spread from a living person occurs with close contact via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread. This route of transmission is not a concern when handling human remains or performing postmortem procedures.

Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

Postmortem activities should be ideally waived off to avoid aerosol generating procedures, and ensuring that if aerosol generation is likely (e.g., when using an oscillating saw) that appropriate engineering controls and personal protective equipment (PPE) are used. These precautions and the use of Standard Precautions should ensure that appropriate work practices are used to prevent direct contact with infectious material, percutaneous injury, and hazards related to moving heavy remains and handling embalming chemicals.

Autopsies on dead bodies which have died with infectious diseases as listed under Category 2 or Category 3 expose staff to unwarranted risk and should generally not be performed. However, if autopsy is to be carried out because of special reasons, the following practices should be adopted.

Specific for dead bodies under Category 2:

- Removing of the dead body from the body bag should be avoided.
- Embalming is generally not be performed.
- Cremation is advisable.

Specific for dead bodies under Category 3:

- Embalming, viewing in funeral and hygienic preparation are strongly prohibited.
- The dead body should NOT be removed from the body bag.
- Unzipping of the body bag is NOT allowed.
- Cremation is strongly advisable.
- Embalming must not be carried out on those who have died from certain Hazard Group 4 diseases.

Packing and transport of the dead body of patients of potential concern to mortuary:

- Death due to COVID-19 is a **Non Medicolegal Case**.
- The deceased must be placed in a zipped body bag **immediately after death with identification tag marked 'COVID-19'**.
- Ensure that the body is fully sealed in an impermeable body bag before being removed from the isolation room or area, and before being transferred to the mortuary, to avoid leakage of body fluid.
- Transfer the body to the mortuary as soon as possible after death.
- **THE MEDICAL/PATHOLOGICAL OR LEGAL AUTOPSY MUST BE AVOIDED IF THERE IS NO SUBSTANTIAL REASON.**
- If an autopsy is being considered, the body may be kept in refrigeration in the mortuary and the autopsy conducted only when a safe environment is available in that mortuary.
- If body is to be held for less than 48 hours, storage at 6°C or below is appropriate. If you need longer-term storage, this should be at temperatures of approximately 4°C. Carry out regular temperature checks of cold storage facilities to confirm that refrigeration units are working effectively
- When properly packed in the body bag, the body can be safely removed for storage in the mortuary, sent to the crematorium, or placed in a coffin for burial.

- The vehicle used for transporting the body from hospital to mortuary or crematorium should be properly disinfected and decontaminated with 1% Sodium Hypochlorite.
- Ensure that mortuary staff and the burial team apply Standard Precautions (i.e. perform proper hand hygiene and use appropriate PPE (Personal protective equipment), including long sleeved gown, gloves and facial protection if there is a risk of splashes from the patient's body fluids or secretions onto the body or face of the staff member).

If an autopsy is performed, collection of the following postmortem specimens is recommended:

- Postmortem clinical specimens for testing for SARS-CoV-2, the virus that causes COVID-19:
 - Upper respiratory tract swabs: Nasopharyngeal Swab AND Oropharyngeal Swab (NP swab and OP swab)
 - Lower respiratory tract swab: Lung swab from each lung.
- Separate clinical specimens for testing of other respiratory pathogens and other postmortem testing as indicated.
- Formalin-fixed autopsy tissues from lung, upper airway, and other major organs.

General guidance for workers / employee in Mortuary:

Mortuary and death care workers who have contact with human remains known or suspected to be contaminated must be protected from exposure to infected blood and body fluids, contaminated objects, or other contaminated environmental surfaces.

- The number of people allowed in the autopsy room should be limited.
- Use of an oscillating bone saw should be avoided for confirmed or suspected cases of COVID-19. Consider using hand shears as an alternative cutting tool. If an oscillating saw is used, attach a vacuum shroud to contain aerosols.
- After handing over the body of the deceased, the mortuary must be kept cleaned using 1% Sodium Hypochlorite. All the surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution for a minimum period of 10 minutes.

Personal protective equipment for handling dead bodies (PPE):

- Wear a disposable, long-sleeved, cuffed gown; if the outside of the body is visibly contaminated with body fluids, excretions, or secretions, ensure that this gown is waterproof. If no waterproof gown is available, wear a waterproof apron in addition to the gown.
- If splashing of body fluids is anticipated, use facial protection: preferably a face shield, or if not, goggles and a medical mask to protect the eyes and mucous membranes.

- Perform hand hygiene after taking off the PPE.
- Use PPE for heavy-duty tasks (e.g. rubber gloves, rubber apron and resistant closed shoes) in addition to regular PPE.

Personal protective equipment during autopsy:

- Engage a minimum number of staff in the procedure, and perform only if an adequately ventilated room suitable for the procedure is available;
- Scrub suit – tops and trousers, or equivalent garments;
- Single-use, fluid-resistant, long-sleeved gown;
- Surgical mask or certified N95, EU FFP2 or equivalent;
- Either autopsy gloves (cut-proof synthetic mesh gloves) or two pairs.
- Knee-high boots.
- Avoid splashes when removing, handling or washing organs, especially lung tissue and the intestines
- Clean surfaces that have become contaminated with tissues or body fluids and decontaminate by removing most of the tissue or body substance with absorbent materials; cleaning surfaces with water and detergent; applying the disinfectant standardized by the health-care facility – if sodium hypochlorite solution is used wet the surface with the solution and allow at least 10 minutes contact time; rinsing thoroughly.
- Remove PPE before leaving the autopsy suite and follow appropriate disposal requirements. After removing PPE, always perform good hand hygiene practices.

Waste disposal:

- All waste generated from the mortuary or embalming room is potentially infectious and should be dealt with as risk waste.
- Staffs that generate risk waste have a duty of care to ensure that it is correctly segregated, sealed and stored and disposed of appropriately, through a licensed agent. Anything that has been contaminated by body fluids should be sealed as risk waste.
- Body fluids and other contaminated liquids may be discharged into the drainage system.
- Liquid products from the management of human remains should not be allowed to drain into surface water, and working sinks in the mortuary and embalming room should be connected to the sewerage system.
- Extreme care must be exercised during the use and disposal of sharps. The use of disposable blades and needles is recommended and should be disposed off by the person who uses them.

Recommendations:

Basic protective measures for all-

- Wash your hands frequently.
- Maintain social distancing of about 2 to 0.5 meters to keep you safe from large droplets.
- Use mask for coughing/ sneezing. Discard the mask after use, don't wear them for more than a day.
- It is advised to avoid crowds, because people who are infected can show no symptoms but are still infectious.
- Avoid touching your eyes, nose and mouth.
- Viruses can last for upto 24 hours on objects, the effective way to get rid is to wash them with soap.

Performance of Last Rites of Deceased dead body of COVID-19:

Once the COVID-19 patient succumbs to death, the medical professionals should hand over the body of the deceased to relatives and friends for last rites assuring that there is no spread of the infection preferably in a fluid proof coffin. The methodology to be adopted to make sure that no spread of infection to people who are dealing with the dead body are enlisted below:

1. Handling staff should be appropriately dressed in PPE i.e. Gloves, water resistant gown/ plastic apron over water repellent gown, and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes.
2. All tubes, drains and catheters attached to the dead body should be removed before handing over to the relatives.
3. Wound drainage and needle puncture holes should be disinfected, surgically closed and dressed with impermeable material.
4. Secretions in oral and nasal orifices can be cleared by gentle suction if needed.
5. Oral, nasal and rectal orifices of the dead body have to be plugged to prevent leakage of body fluids.
6. Before packing the dead body, it should be cleaned and disinfected using sterilizing agent based on 70% Alcohol or 1% Sodium Hypochlorite.
7. Transfer the body to mortuary at the earliest with body covered in a robust, leak proof zipped transparent plastic body bag which is locked properly using nylon cable zip ties to avoid spillage of any fluids. The plastic body bag should not be less than 150 µm thick.
8. The bagged body should be either wrapped with a mortuary sheet or placed in an opaque body bag.
9. The body bag packing should again be disinfected using sterilizing agent.
10. Embalming of such bodies should be avoided.

11. Relatives are allowed to view the deceased one last time before last rites after followed standard precautionary measures and unzipping the face end of the body bag.
12. For the purpose of last rites, cremation should be preferred for complete elimination of chances of infection in either electric or gas crematorium in situ in zipped body bag. However keeping in mind the religious views of the family, if the burial of the body is requested, then it should be assured that the body is buried in a thick, air tight coffin and placed at normal depth of burial (4 to 6 feet). It is recommended that the area above and adjacent to the grave should be cemented immediately as an additional precautionary measure and the space should be marked and required precautions should be taken to avoid scavenging by animals.
13. As a precautionary measure large gathering at the crematorium/ burial ground should be avoided to maintain a healthy distancing.
14. The remains of the last rites like ashes do not pose any risk of infection and can be collected for religious immersion.
15. Remove personal protective equipment after handling of the dead body. Then, perform hand hygiene immediately.

References-

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